What is claimed is:

1. A method of computing a distance measure between first and second mixture type probability distribution functions,

$$G(x) = \sum_{i=1}^{N} \mu_i g_i(x), \qquad H(x) = \sum_{k=1}^{K} \gamma_k h_k(x),$$

comprising the step of evaluating the equation:

$$D_M(G, H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, g_i, of the first probability distribution function and a component, h_k, of the second probability distribution function

where

$$\sum_{i=1}^{N} \mu_i = 1 \ \ and \ \sum_{k=1}^{K} \gamma_k = 1.$$

and

$$\omega_{ik} \geq 0,\ \ 1 \leq i \leq N,\ 1 \leq k \leq K$$

and

$$\sum_{k=1}^{K} \omega_{ik} = \mu_i,\ 1 \leq i \leq N,\ \sum_{i=1}^{N} \omega_{ik} = \gamma_k,\ 1 \leq k \leq K.$$

2. The method according to claim 1 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

Sub A2

3. The method according to claim 1 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

Sub B3

4. The method of claim 1 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

5. A computer program embedded in a storage medium for computing a distance measure between first and second mixture type probability distribution functions,

$$G(x) = \sum_{i=1}^{N} \mu_i g_i(x), \qquad H(x) = \sum_{k=1}^{K} \gamma_k h_k(x),$$

in accordance with the equation:

$$D_M(G,H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, g_i, of the first probability distribution function and a component, h_k, of the second probability distribution function

where

$$\sum_{i=1}^{N} \mu_i = 1 \ \ and \ \sum_{k=1}^{K} \gamma_k = 1.$$

and

$$\omega_{ik} \geq 0, \ 1 \leq i \leq N, \ 1 \leq k \leq K$$

and

$$\sum_{k=1}^{K} \omega_{ik} = \mu_i, \ 1 \leq i \leq N, \ \sum_{i=1}^{N} \omega_{ik} = \gamma_k, \ 1 \leq k \leq K.$$

6. The computer program according to claim 5 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

7. The computer program according to claim 5 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

and B,

8. The computer program of claim 5 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

9. A computer system for computing a distance measure between first and second mixture type probability distribution functions,

$$G(x) = \sum_{i=1}^{N} \mu_i g_i(x), \qquad H(x) = \sum_{k=1}^{K} \gamma_k h_k(x),$$

in accordance with the equation:

$$D_M(G,H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k),$$

where $d(g_i, h_k)$ is a function of the distance between a component, g_i, of the first probability distribution function and a component, h_k, of the second probability distribution function

where

$$\sum_{i=1}^{N} \mu_i = 1 \ \ and \ \sum_{k=1}^{K} \gamma_k = 1.$$

and

$$\omega_{ik} \geq 0, \ 1 \leq i \leq N, 1 \leq k \leq K$$

and

$\cancel{\sum_{k=1}^{K}\omega_{ik}=\mu_i,\ 1\le i\le N,\ \sum_{i=1}^{N}\omega_{ik}=\gamma_k,\ 1\le k\le K.}$

10. The computer system according to claim 9 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

11. The computer system according to claim 9 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

12. The computer system of claim 9 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

13. A method for computing a distance measure between first and second mixture type probability distribution functions G and H, wherein:

$$G(x) = \sum_{i=1}^{N} \mu_i g_i(x),$$

wherein μ_i is a weight imposed on a component, $g_i(x)$, of the first probability distribution function and

$$H(x) = \sum_{k=1}^{K} \gamma_k h_k(x),$$

wherein γ_k is a weight imposed on a component h_k, of the second probability distribution function comprising the steps of:

computing an element distance, $d(g_i, h_k)$, between each g_i and each h_k where $1 \le i \le N, 1 \le k \le K$,

computing an overall distance, denoted by $D_M(G, H)$, between the first mixture probability distribution function, G, and the second mixture probability distribution function, H, based on a weighted sum of the all element distances,

$$\sum_{i=1}^{N}\sum_{k=1}^{K}\omega_{ik}d(g_i,h_k),$$

wherein weights $\omega_{i,k}$ imposed on the element distances $d(g_i, h_k)$, are chosen so that the overall distance $D_M(G,H)$ is minimized and

$$\omega_{ik} \geq 0, \quad 1 \leq i \leq N, 1 \leq k \leq K$$

$$\sum_{i=1}^{N}\omega_{ik} = \gamma_k, 1 \leq k \leq K, \quad and$$

$$\sum_{k=1}^{K}\omega_{ik} = \mu_i, 1 \leq i \leq N.$$

14. The method according to claim 13 wherein at least one of said first and second mixture probability distribution functions includes a Gaussian Mixture Model.

add B1

15. The method according to claim 13 wherein the element distance between the first and second probability distance functions includes Kullback Leibler Distance.

B

16. The method of claim 13 wherein the first and second probability distribution functions are Gaussian mixture models derived from audio segments.

add B2